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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/635,521	08/09/2000	Katherine Galvin	MNI-094	5630

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EXAMINER
LOEB, BRONWEN

ART UNIT	PAPER NUMBER
1636	9

DATE MAILED: 02/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/635,521	GALVIN ET AL.	
	Examiner	Art Unit	
	Bronwen M. Loeb	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-69* is/are pending in the application.

4a) Of the above claim(s) *1-24 and 31-69* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *9 August 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☑ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

DETAILED ACTION

This action is in response to the amendment filed 31 December 2001 (certificate of mailing date 30 November 2001).

Claims 1-69 are pending.

Election/Restrictions

1. Applicant's election without traverse of Group V in Paper No. 8 is acknowledged.

2. Claims 1-24 and 31-69 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

Drawings

3. The drawings are objected to because the test in Figure 8A is so small as to be illegible. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The abstract of the disclosure is objected to because it exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

The specification does not define the meaning of the abbreviation MPM used in Figure 7.

Figures 7 and 8 are multi-paneled but the Brief Description of the Drawings does not reflect that. It would be remedial to amend the specification to read, for instance on p. 8, line 17 "Figures 7A and 7B are graphs depicting...".

Appropriate correction is required.

Claim Objections

6. Claims 26 is objected to because of the following informalities: Claim 26 recites "the disorder a disorder" in line 1 which phrase appears to be missing the word "is". Appropriate correction is required.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. §101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 25-30 are rejected under 35 U.S.C. §101 because the claimed invention lacks patentable utility. Claim 25 is drawn to a method for identifying a compound capable of treating a cardiovascular or tumorigenic disorder characterized by aberrant GPCR 4941 nucleic acid expression or GPCR 4941 polypeptide activity. GPCR 4941 was cloned as sequence related to growth hormone secretagogue receptor (GHS-R) which is an orphan receptor (has no known ligand or function); it was named GPR39 in the reference. See McKee et al (1997) Genomics 46: 426-434 (provided on applicant's IDS). This reference concluded with the observation that the ligand and the function of the GPR39/GPCR 4941 needed to be determined. See Abstract and final paragraph of

reference. Applicants do little more than speculate that GPCR 4941 molecules "may be signal transduction proteins" (p. 9, lines 24-25). While Applicant demonstrates that the expression of GCPR 4941 is upregulated in a number of types of ovarian cancers, there is simply no demonstration of a causal relationship between GPVR 4941 gene expression or polypeptide activity and ovarian cancer or any of the very many other disorders taught in the specification. Given the lack of known function for GPCR 4941 and the lack of causal relationship between it and any disease or disorder, there is no specific, credible utility for any compound that is found to modulation GPCR 4941 nucleic acid expression of GPCR 4941 polypeptide activity. Consequently, there is no specific, credible utility for a method of identifying such a compound. The skilled artisan would have to undertake a substantial amount of work to determine the function of GPCR 4941 and if its aberrant expression or activity causes any disorder or disease, in order to ascertain a function for such a compound. The claimed invention is not in a readily available form; instead, further experimentation on GPCR 4941 and its biological function and role in diseases would be required before the claimed method could be used.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. §112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 25-30 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The following factors have been considered in formulating this rejection (*In re Wands*, 858F.2d 731, 8 USPQ2d 1400 (Fed. Cir. 1988): the breadth of the claims, the nature of the invention, the state of the prior art, the relative skill of those in the art, the predictability or unpredictability of the art, the amount of direction of guidance presented, the presence or absence of working examples of the invention and the quantity of experimentation necessary.

The present claims are very broad. Claim 25 encompasses a method for identifying a compound capable of treating any cardiovascular or tumorigenic disorder characterized by aberrant GPCR 4941 nucleic acid expression or GPCR 4941 polypeptide activity.

The nature of the invention is an assay for identifying compounds capable of treating any cardiovascular or tumorigenic disorder characterized by aberrant GPCR 4941 nucleic acid expression or GPCR 4941 polypeptide activity.

An analysis of the prior art as of the effective filing date of the present application shows, as discussed above, GPCR 4941 was cloned in 1997 by McKee et al as a sequence related to an orphan receptor called growth hormone secretagogue receptor (GHS-R). This orphan receptor is speculated to respond to an undiscovered hormone involved in the pulsatile release of GH. See p. 426, second column, lines 4-6. GPCR

4941 /GPR39 was cloned from human genomic DNA under low stringency hybridization conditions. The ligand-binding and functional properties of GPR39 were not determined in this reference. See p. 433, second column, lines 5-13.

The relative skill of those in the art of assays and cardiovascular and tumorigenic disorders is high.

The area of the invention is unpredictable because it is not known what if any cardiovascular or tumorigenic disorders are caused by aberrant GPCR 4941 nucleic acid expression or GPCR 4941 polypeptide activity.

The present specification provides little direction or guidance to support the claimed invention. The specification describes a very broad range of cardiovascular disorders and tumorigenic disorders (see pp. 10-11) that may be treated by the compounds identified by the claimed method. As discussed above, there is no disclosure of the biological function of GPCR 4941 nor is there any disclosure of aberrant gene expression of GPCR 4941 or GPCR 4941 polypeptide activity being causal in any of these disorders. While the examples indicate that GPCR 4941 expression is upregulated in several types of ovarian tumors, some breast tumors, lung tumors and glioblastomas and may correlate with pathogenesis of artheriosclerosis (see Ex. 2 and 3), such correlations do not indicate a causal relationship between the upregulation of GPCR 4941 and the disorder. Therefore, it is entirely unknown if a compound which modulates with the nucleic acid expression or the polypeptide activity could possibly have any therapeutic value in any of the taught disorders. Furthermore, since the polypeptide activity of GPCR 4941 is unknown, the specification cannot

possibly teach how to determine if a compound modulates the activity of GPCR 4941. Since the specification merely speculates that GPCR 4941 may function as a signal transduction protein, it is unknown what intracellular second messengers (recited in claim 30), if any, should be detected as a measure of GPCR 4941 polypeptide function.

No working examples are disclosed which encompass identifying a compound capable of treating any cardiovascular or tumorigenic disorder characterized by aberrant GPCR 4941 nucleic acid expression or GPCR 4941 polypeptide activity.

The quantity of experimentation necessary to carry out the claimed invention is high as the skilled artisan could not rely on the prior art or the present specification to teach how to use the claimed method. One of skill in the art would have to undertake a very substantial amount of experimentation in order to use the method. First, one must ascertain the biological function of GPCR 4941. Second, one must determine if the aberrant gene expression or polypeptide function of GPCR 4941 is the cause of any cardiovascular or tumorigenic disorder. Third, one must determine if any compound which modulates either the aberrant gene expression or polypeptide function has any therapeutic value in any disorder found to be caused by GPCR 4941. Since neither the prior art nor the present specification provides the answer to all of the questions, it would require a large quantity of trial and error experimentation by the skilled artisan to answer them.

Based on the broad scope of the claims, the unpredictability in the area of the invention, the lack of sufficient guidance or working examples in the specification and the quantity of experimentation necessary, it would clearly require undue

experimentation by one of skill in the art to determine how to use the claimed method for identifying a compound capable of treating any cardiovascular or tumorigenic disorder characterized by aberrant GPCR 4941 nucleic acid expression or GPCR 4941 polypeptide activity.

10. The following is a quotation of the second paragraph of 35 U.S.C. §112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 25-30 rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 is vague and indefinite in reciting "GPCR 4941". The specification suggests that this is both a family of G-protein coupled receptor genes (p. 8, lines 32-37) and yet also indicates that "GPCR 4941" has a specific nucleotide sequence and amino acid sequence (p. 7, lines 34-37). Thus it is unclear if the claim is drawn to a family of genes or to a particular gene and therefore the metes and bounds of the claim are unclear.

Claim 25 is rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted step is: a step in which compounds identified by the recited method steps as modulating GPCR 4941 nucleic acid expression of GPCR 4941 polypeptide activity are determined to be capable of treating

a cardiovascular or tumorigenic disorder. The method steps recited lead to identifying a modulator not to identifying a compound as capable of treating a disorder.

Conclusion

Claims 25-30 are rejected.

Certain papers related to this application may be submitted to Art Unit 1636 by facsimile transmission. The faxing of such papers must conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 C.F.R. § 1.6(d)). The official fax telephone numbers for the Group are (703) 308-4242 and (703) 305-3014. NOTE: If Applicant does submit a paper by fax, the original signed copy should be retained by applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers in the Office.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bronwen M. Loeb whose telephone number is (703) 605-1197. The examiner can normally be reached on Monday through Friday, from 10:00 AM to 6:30 PM. A phone message left at this number will be responded to as soon as possible (usually no later than the next business day after receipt by the examiner).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Remy Yucel, can be reached on (703) 305-1998.

Any inquiry of a general nature or relating to the status of this application should be directed to Tracey Johnson, Patent Analyst whose telephone number is (703) 305-2982.

Bronwen M. Loeb, Ph.D.
Patent Examiner
Art Unit 1636

February 25, 2002

REMY YUCEL, PH.D
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